

Feline Hyperthyroidism and Radioactive Iodine Therapy

What does the thyroid gland normally do?

The thyroid gland is an organ in the neck that uses iodine to make thyroid hormone. Thyroid hormone is responsible for maintaining many basic functions within the body.

What is Hyperthyroidism?

Hyperthyroidism is the overproduction of thyroid hormone that can occur in cats. It most typically occurs secondary to a benign adenoma of the thyroid gland. In very rare instances it can be associated with thyroid cancer in cats. The increase in thyroid hormone results in a cluster of clinical signs that are typical to cats with the disease.

What clinical signs does hyperthyroidism cause?

Early in the disease cats will have no clinical signs. Most cats with hyperthyroidism, however, have a number of typical clinical signs. With time, signs become more severe and more obvious. If left untreated, the disease is fatal.

Common signs include:

- Weight loss
- Polydipsia
- Polyphagia
- Anxiety
- Increased activity

Less common signs include:

- Vomiting
- Diarrhea
- Apathy
- Panting

- ❖ *Polyphagia* is a marked increase in appetite
- ❖ *Polydipsia* is a marked increase in drinking

What laboratory changes does hyperthyroidism cause?

Hyperthyroidism causes a number of lab changes. The most important lab change is the increase in thyroid hormone levels. Many cats with hyperthyroidism will also have mildly elevated liver enzymes.

- ❖ T4 and free T4 are the most common thyroid hormones measured

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What testing is recommended for hyperthyroid patients?

In evaluating patients with hyperthyroidism, there are many things that need to be considered. CBC, chemistry profile, and urinalysis are performed to evaluate kidney function and look for other underlying diseases that may be present. Thyroid hormone levels are checked to confirm the diagnosis and direct therapy. Chest radiographs are also recommended to evaluate for other underlying diseases. The heart may require more thorough evaluation in cases with indications of heart disease.

Most patients evaluated for hyperthyroidism will need the following tests:

- Chemistry profile
 - Urinalysis
 - Chest Radiographs
 - Thyroid levels
 - Complete Blood Count (CBC)
- ❖ Chest Radiographs or x-rays are used to evaluate overall heart size and for other diseases in the chest.
 - ❖ Electrocardiogram or ECG and Echocardiogram or cardiac ultrasound are non-invasive tests that can help us to evaluate the heart in certain cases.

What is the connection with hyperthyroidism and heart disease?

Thyroid hormone causes an increase in heart rate and thickening of the heart muscle (*hypertrophic cardiomyopathy*). Without treatment, this heart disease advances and can become fatal. With treatment, the heart disease often subsides. Because hypertrophic cardiomyopathy can occur independent of hyperthyroidism, however, some cats require lifelong therapy for heart disease despite treatment of the hyperthyroidism.

What is the connection with hyperthyroidism and kidney disease?

Older cats are commonly affected by both chronic kidney disease (see website for more in-depth details) and hyperthyroidism. Thyroid hormone causes an increase in blood flow to the kidneys and blood pressure in the kidneys. This can mask underlying kidney disease. With treatment of hyperthyroidism, markers of kidney disease may therefore increase. This is not an indication that the kidney disease has progressed. Instead, it is an accurate representation of the kidney disease that was already present. Kidney disease does affect the treatment options for patients with hyperthyroidism and we will help to guide you in making the best decision for your cat.

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What treatment options are available for hyperthyroid patients?

There are three primary treatment options available for patients with hyperthyroidism.

- ❖ Surgery to remove the thyroid gland is rarely recommended because it is invasive and there are potential serious complications. It is used primarily in cases of thyroid cancer.
- ❖ *Methimazole (Tapazole®)* is a daily medication that is given for life and inhibits thyroid hormone production. Side effects of the medication are relatively common and include facial itchiness, vomiting, diarrhea, inappetence, bone marrow disease, liver disease and other less common complications. All cats on this medication require intermittent laboratory testing to follow medical therapy and look for medication side effects. While most cats tolerate the medication, the long term costs and delivery problems make it a second-line choice in most patients.
- ❖ **Radioactive iodine or I^{131}** therapy is the treatment of choice for cats with hyperthyroidism. This is a convenient one-time treatment that shows remarkable efficacy and exceptionally rare side effects. While initial costs may be significant, it is cost effective when compared to the long term expense of methimazole.

What is involved in radioactive iodine therapy?

- ❖ Your cat must be referred for treatment with radioactive iodine.
- ❖ Before referral, your veterinarian will perform the basic tests outlined above. In certain cases, additional testing may be recommended by our office.
- ❖ Your initial visit with our doctors will be on a Tuesday, the day before iodine injection. We will perform a physical examination and review the test results from your veterinarian. We will discuss the treatment and answer any questions you may have. We will also provide basic information about home care after the iodine therapy.
- ❖ You will be asked to bring food and any medications that your cat will need while staying with us.
- ❖ Your cat will stay overnight and get the treatment Wednesday. This is a simple injection given under the skin just like a vaccine. We will shave a small area for this injection.
- ❖ Your cat will stay between five and seven days. We will be calling you daily with updates on how your cat is doing.
- ❖ Radioactivity levels are measured and once below a state-mandated level we will call to tell you that your cat can go home.

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What side effects can be caused by the radioactive iodine?

Radioactive iodine therapy is generally free of significant side effects. The radiation dose is small and does not cause any long term problems. Cats that have underlying kidney disease can have an acute decompensation of their kidney disease after therapy, but even this is very rare. We will review your cat's medical history to make certain that he or she is a good candidate.

What is the prognosis with hyperthyroidism?

The prognosis with hyperthyroidism and radioactive iodine therapy is excellent. The treatment is highly effective and animals are cured of the problem in all but a few cases. With effective treatment, all of the hyperthyroid-associated clinical signs eventually resolve and the patient returns to normal. Not all cats are good candidates for iodine therapy and we will guide you and your veterinarian in making the best decision for your feline family member.

